

Claims

1. A polymer blend comprising
 - (a) 1 – 99% by weight of a copolymer of ethylene and an alpha olefin having from 3 to 10 carbon atoms, said copolymer having
 - (iv) a density in the range 0.905 to 0.940 g cm⁻³,
 - 5 (v) a melt elastic modulus G' ($G'' = 500$ Pa) in the range 10 to 150 Pa, and
 - (vi) a melt index in the range 5 to 50, and
 - (b) from 1 – 99% by weight of a low density polyethylene (LDPE) polymer having a density from 0.914 to 0.928 g cm⁻³wherein the sum of (a) and (b) is 100 %.
- 10 2. A polymer blend according to claim 1 wherein the copolymer of component (a) has a density in the range 0.907 to 0.915.
3. A polymer blend according to claim 1 wherein the copolymer of component (a) has a melt index in the range 12 to 50.
4. A polymer blend according to claim 1 wherein the copolymer of component (a)
- 15 has a melt elastic modulus G' in the range 11 to 90 Pa.
5. A polymer blend according to any of the preceding claims wherein the copolymer of component (a) has a flow activation energy (E_a) in the range 28 to 50.
6. A polymer blend according to any of the preceding claims wherein the copolymer of component (a) has a M_w/M_n in the range 2 to 3.5.
- 20 7. A polymer blend according to any one of the preceding claims wherein the copolymer of component (a) exhibits more than one differential scanning calorimetry (DSC) melting peaks between 30° and 150°C.
8. A polymer blend according to any of the preceding claims wherein the LDPE of

component (b) has a melt index in the range 0.1 to 25.

9. A polymer blend according to any of the preceding claims wherein the LDPE of component (b) has a melt elastic modulus G' in the range 80 to 200 Pa.

10. A polymer blend according to any of the preceding claims wherein the ratio of component (a) to component (b) is in the range 60:75 to 40:25 by weight.

11. A polymer blend according to any of the preceding claims wherein the blend has a melt elastic modulus G' in the range 30 to 200 Pa.

12. A polymer blend according to claim 11 wherein the blend has a melt elastic modulus G' in the range 30 to 200 Pa.

10 13. A polymer blend according to claim 12 wherein the blend has a melt elastic modulus G' in the range 60 to 120 Pa.

14. A polymer blend according to claim 13 wherein the melt elastic modulus G' is in the range 75-100 Pa.

15. A polymer blend comprising

15 (a) 1-99% by weight of a copolymer of ethylene and an alpha olefin having from 3 to 10 carbon atoms, said copolymer having

(vii) a density in the range 0.905 to 0.940 g cm⁻³,

(viii) a melt elastic modulus G' ($G''=500$ Pa) in the range 10 to 150 Pa, and

(ix) a melt index in the range 5 to 50, and

20 (b) from 1-99% by weight of a low density polyethylene (LDPE) polymer having a density from 0.914 to 0.928 g cm⁻³, and

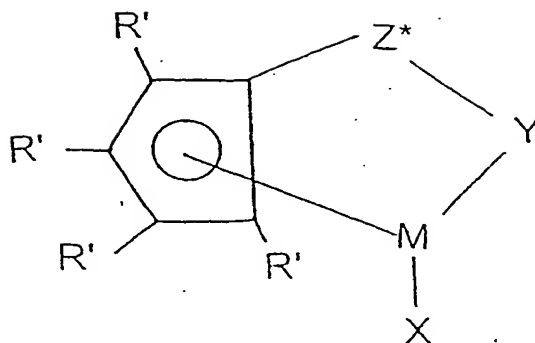
(c) from 0-98% by weight of a copolymer of ethylene and an alpha-olefin having 3 to 10 carbon atoms or a low density polyethylene (LDPE)

wherein the sum of (a), (b) and (c) is 100 %.

25 16. A polymer blend according to any of the preceding claims wherein the copolymer of component (a) is prepared by use of a catalyst system comprising a transition metal compound.

17. A polymer blend according to claim 16 wherein the transition metal compound is a metallocene.

30 18. A polymer blend according to claim 17 wherein the metallocene has the general formula



wherein:-

R' each occurrence is independently selected from hydrogen, hydrocarbyl, silyl, germynyl, halo, cyano, and combinations thereof, said R' having up to 20 nonhydrogen atoms, and optionally, two R' groups (where R' is not hydrogen, halo or cyano) together form a divalent derivative thereof connected to adjacent positions of the cyclopentadienyl ring to form a fused ring structure;

X is a neutral η^4 bonded diene group having up to 30 non-hydrogen atoms, which forms a π -complex with M;

Y is -O-, -S-, -NR*-, -PR*-;

M is titanium or zirconium in the + 2 formal oxidation state;

Z* is SiR^*_2 , CR^*_2 , $\text{SiR}^*_2\text{SiR}^*_2$, $\text{CR}^*_2\text{CR}^*_2$, $\text{CR}^*=\text{CR}^*$, $\text{CR}^*_2\text{SiR}^*_2$, or GeR^*_2 , wherein:

R* each occurrence is independently hydrogen, or a member selected from hydrocarbyl, silyl, halogenated alkyl, halogenated aryl, and combinations thereof, said R* having up to 10 non-hydrogen atoms, and optionally, two R* groups from Z* (when R* is not hydrogen), or an R* group from Z* and an R* group from Y form a ring system.

19. A polymer blend according to claims 16 to 18 wherein the copolymer is prepared in the gas phase.

20. A polymer blend according to any of the preceding claims wherein the low density polyethylene (LDPE) of component (b) is prepared by a high pressure process.

21. An extrusion coating comprising a polymer blend comprising

(a) 1–99% by weight of a copolymer of ethylene and an alpha olefin having from 3 to 10 carbon atoms, said copolymer having

- (i) a density in the range 0.905 to 0.940 g cm⁻³,
- (ii) a melt elastic modulus G' ($G'' = 500$ Pa) in the range 10 to 150 Pa, and
- (iii) a melt index in the range 5 to 50, and

(b) from 1–99% by weight of a low density polyethylene (LDPE) polymer having a density from 0.914 to 0.928 g cm⁻³

wherein the sum of (a) and (b) is 100 %.

22. An extrusion coating comprising a polymer blend comprising

(a) 1–99% by weight of a copolymer of ethylene and an alpha olefin having from 3 to 10 carbon atoms, said copolymer having

- (i) a density in the range 0.905 to 0.940 g cm³,
- (ii) a melt elastic modulus G' ($G'' = 500$ Pa) in the range 10 to 150 Pa, and
- (iii) a melt index in the range 5 to 50,

(b) from 1–99% by weight of a low density polyethylene (LDPE) polymer having a density from 0.914 to 0.928 g cm⁻³, and

(c) from 0.98% by weight of a copolymer of ethylene and an alpha olefin having 3 to 10 carbon atoms or a low density polyethylene (LDPE) wherein the sum of (a), (b) and (c) is 100%